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Photo illustration by Mara Leonardi

A year in 140 characters or less

BY ALAN ZEICHICK

Big yr #2009 Twtr Oracle got @Sun MySQL slo Java .NET fast Hadoop Spring #Win7 #iPhone Netbk #Silverlight Cloud Amazon Google SForce @Google

That pretty much says it all, doesn't it? The rise of Twitter demonstrated that we can pack a lot of information into 140 ASCII characters without any type of obvious binary compression or data encoding. Of course, there's an entire subculture filled with Twitter-friendly abbreviations, many of which have been derived from text messaging or online forums—everything from classics ROFL (rolling on the floor laughing) to IMHO (in my humble opinion) to YMMV (your mileage may vary) to terms that only n00bs wouldn't get, like w00t.

That said, here's an unpacking of the above Twitter line, representing what, IMHO, are the most significant events affecting development managers over the past year. Maybe you'll ROFL, maybe not. There are some predictions too. YMMV.

Twitter Emerged. Initially starting as a way for people to tell their friends what they're doing, Twitter has become a mainstream marketing platform and a news broadcast medium. Follow your favorite pundits on Twitter, or subscribe to news feeds (like our own @sdtimes or my personal @zeichick). Programmatic uses for Twitter messages, which could be described as broadcast datagrams that can also be directed as multicast or unicast data-

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Sun puts Java EE 6 platform into the wild

BY ALEX HANDY

Almost 10 years to the day since the 1999 release of Java EE 1.2, Sun announced that Java EE 6 is ready for business.

In the three years since the last major update to the Java EE platform, a great deal has changed in Java, and EE 6 reflects these changes. Chief among the new features are a slimmed down Web Profile installation of the EE platform, support for RESTful Web services, and the last-minute inclusion of dependency injections.

Sun also released NetBeans 6.8 and GlassFish Enterprise Application Server version 3. Both of these are compatible with Java EE 6 and include support for new features. GlassFish, for example, is also available in a Web Profile form, and NetBeans 6.8 adds handlers for REST.

The Web Profile form of Java EE 6 is a slimmed-down installation of the Java EE ecosystem. Built in response to developer complaints over the years, Java EE 6 adds Profiles, which will be targeted installations for specific purposes. Initially, only the Web Profile is available, but Sun has said it is looking into more configurations. The Web Profile version of Java EE 6 installs only the pieces of the language and ecosystem needed to run Web applications, such as JPA and JSF.

GlassFish too can be slimmed down for specific Web purposes. Both the Java EE 6 environment and the GlassFish application server can then be upgraded to the full Java EE 6 stack without the need to change or update applications, said Tom Kincaid, executive director of Sun's Application Platform organization. "We expect this to be very popular with Web application development and deployment," he said.

NO FRAGILE FISH

GlassFish Enterprise Application Server version 3 is a commercially licensed form of the open-source GlassFish server project. Owning the commercial

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EC accepts Microsoft browser deal

Company avoids punishment by offering choice with Windows

BY DAVID WORTHINGTON

The European Commission's ongoing antitrust case against Microsoft reached an anticlimactic end in December when the trade body agreed to accept the company's concessions to resolve a lawsuit that was filed against it for bundling its Internet Explorer browser with Windows.

The settlement requires Microsoft to offer Windows users a ballot of browsers to choose from, with a total of 12 choices. The five most popular browsers (Chrome, Firefox, IE, Opera and Safari) will receive the most prominent placement.

Microsoft initially resisted the ballot, instead opting to strip IE out of Windows entirely. The ballot will be made available for Windows XP, Windows Vista and Windows 7.

Browser maker Opera Software filed an antitrust complaint with the EC in December 2007, and the EC was prepared to rule against Microsoft as recently as June.

"We are pleased with today's decision by the European Commission, which approves a final resolution of several longstanding competition law issues in Europe," said Microsoft senior vice president and general counsel Brad Smith. "We look for-

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ObjectBuilders makes sure apps follow their specifications
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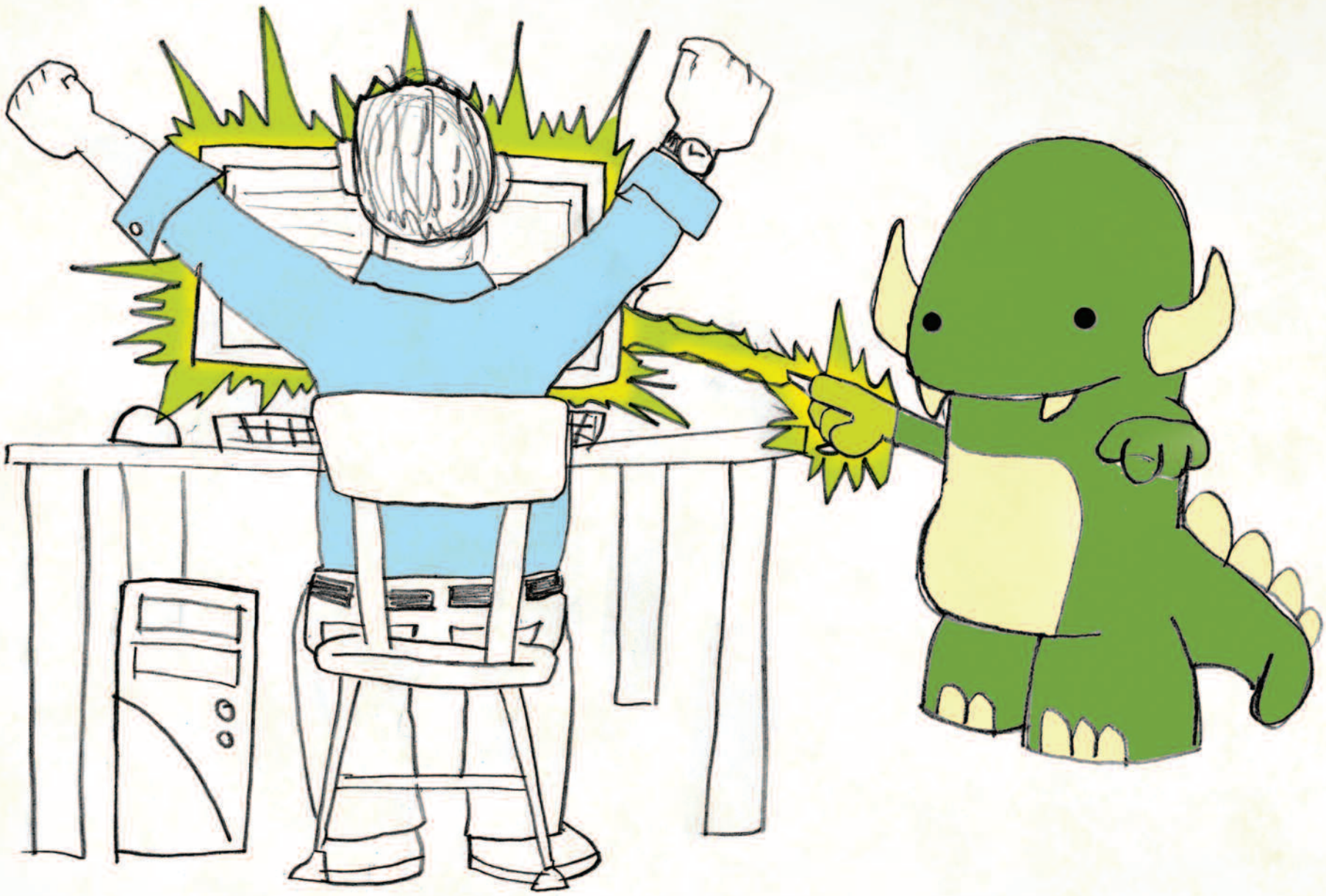

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Introducing the Perforce Plug-in for Eclipse

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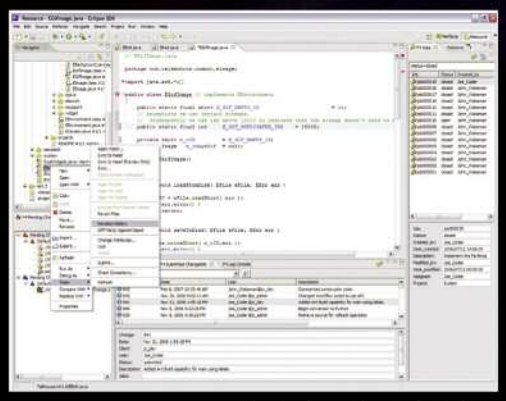

The Perforce Plug-in for Eclipse

The Perforce Plug-in for Eclipse provides developers with easy access to Perforce SCM from within their Eclipse-based IDE. Functionality includes:

- Quick access to complete file history
- Full support of collaborative development with the ability to merge files
- Ability to work offline when connection to the Perforce Server is unavailable
- Built-in file compare utility and defect tracking support
- Supports the refactoring functionality of the Eclipse environment

The Perforce Plug-in for Eclipse supports both Windows and Linux, and is just one of the many integrations that come with the Perforce SCM System.

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Google updates Web Toolkit to 2.0

Java-to-JavaScript suite brings new debugging, code snipping capabilities

BY ALEX HANDY

Google has long seen Java as a better JavaScript. The company's Google Web Toolkit has been translating Java into JavaScript for developers for over two years now. In December, the company updated the toolkit to version 2.0. This new version brings the Google Chrome browser into the mix for debugging purposes, and introduces the ability to chop code up into bite-sized snippets for use on the client end.

Andrew Bowers, product manager for GWT, said that this release was all about speed. GWT 2.0 improvements, he said, can be divided up into two categories: those that make development faster, and those that make applications run faster.

"We've seen that JavaScript performance has increased dramatically over the last 12 months," said Bowers. "We're seeing functionality moving into HTML itself with HTML 5 and CSS 3; bottlenecks are occurring not just in JavaScript, but elsewhere."

To remedy this, Bowers and the GWT team built Speed Tracer, an optimization tool that runs in Chrome and can be used to determine where in an application slowdowns are occurring.

"It's a Chrome extension that's a little different than some of the existing tools that focused on a page as it loads," he said. "Speed Tracer is designed to watch an application over time. It's also designed to bring simplicity.

"Other profilers would give you reams of data, but not show you where to look. We give you two graphs: sluggishness and network. The network graph is overlaid on top of the sluggishness graph so you can correlate that with network speeds."

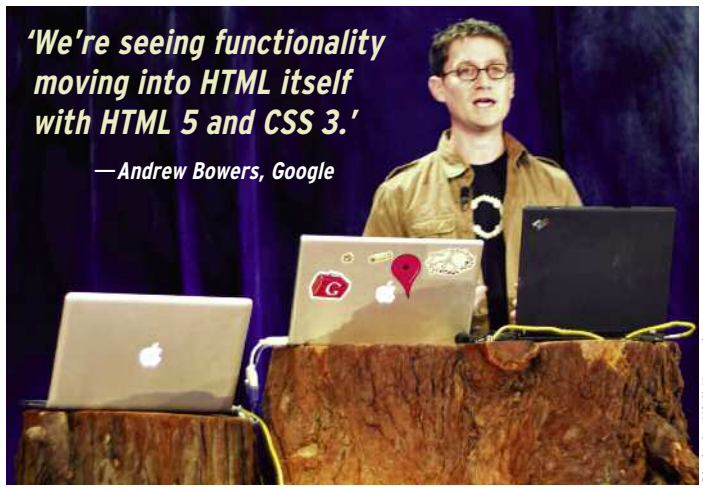


Photo by Niall Kennedy

That information can also be coordinated with the steady stream of narration Speed Tracer provides. Bowers said that each action performed by the server, from rendering style sheets to pulling down XML, is listed as it happens, so when things slow down, developers can see exactly what's being processed in the browser and causing the slowness.

GWT 2.0 also includes a new modular declarative UI builder called UiBinder. This, said Bowers, came from an internal desire at Google to be able to build websites graphically without changing the underlying application code.

Of all the changes in version 2.0, Bowers said that the new code-splitting capabilities required the most raw computer science know-how. Code splitting began as a part of the Google Wave project, where the client-side Google Wave application was growing at a slow rate.

"We needed a way to get the time from startup to application faster," said Bowers. "What code splitting does is it just downloads the parts of an application when you need them. Does your application have a settings page? There's no reason to download it with the initial JavaScript download for the rest of the application."

Code splitting can be guided by developers, but it is automatically executed by the GWT compiler. Bowers said those algorithms were difficult to create and represented the most challenging part of GWT 2.0. ▮

Coordinated effort at IBM results in new Linux servers

Services, products, hardware beginning to work together on higher-level stacks

BY ALEX HANDY

IBM has introduced a host of new Linux servers in an effort to entice enterprises into upgrading their systems' underlying legacy applications.

The new Series z Linux servers were announced in December alongside an array of systems consolidation services and software products. This coordinated effort by IBM's traditionally separate products, services and hardware arms is exemplary of IBM's three-year effort to bring its disparate parts closer together.

Douglas Hunt, vice president of technology at IBM, said that for the past three years, IBM's chairman and CEO Sam Palmisano has pushed down hard on upper management to encourage more collaboration. The result is less of a focus on piecemeal software solutions, and more focus on addressing vertical markets through more robust stacks.

The new Series z Linux servers, and related software and products, were all announced at the same time, the result of the newfound collaboration within IBM. The company's three major business units, hardware, business services and business technology services, all worked together on this release.

IBM's Douglas Hunt says the company pushed for collaboration.

A similar collaboration culminated in July when IBM announced a new WebSphere appliance that came from collaboration between hardware and software teams at IBM. For any other corporation, such internal collaboration wouldn't be news. But for IBM, it's a major change in the company's game plan.

"I have to give credit to the chairman. He formed the integration values team, where he took the 300 top executives [at IBM] and he measures us on a yearly basis on how we're integrating across the enterprise," said Hunt. "For the last three or four years, you've seen this pressure at the very tops of the business to demonstrate what we've done to work together to deliver higher values to clients."

That internal collaboration has already yielded fruit, even before the Linux server announcement. Hunt pointed to IBM's release this September of Integrated Information Framework 1.3, an application framework stack specifically targeted at petroleum refineries.

While targeting a vertical market is nothing new, for IBM it is a decidedly different way of doing business. Hunt said that collaboration across the vast corporate power structure of IBM showed that customers were having trouble with IBM's software services.

"Historically, we've had all these capabilities, and we provided them to clients and expect them to work with the services team to get what they needed," he said. "We decided to engineer it at a higher level to give clients a higher level of consumability and allow them to acquire this pre-engineered packaging."

Another reason for IBM to offer higher-level stacks is the increasing popularity of similar application frameworks from Oracle. Oracle's Application Framework packs now number in the dozens, each targeting a specific industry, such as health care, insurance and finance.

"At the Oracle level, they may have some skills around industry levels. We have deep industry knowledge to tap into very detailed levels of knowledge on the upstream and downstream side of the oil and gas space," said Hunt.

Though Hunt couldn't detail any specific application frameworks that were on the way, he did say that this new focus on higher-level stacks should be cheaper.

"We realize at the end of the day that when we use this model, it'll be less services, but we need to capture some of the value for the engineering work that's been done," he said. "At the end of the day the cost will be less for the client, but we expect to sell more of them."

For Series z users, IBM is offering eight different configurations, each targeted at a specific use case: data warehousing, application development, disaster recovery, security, electronic payments, SAP applications, service-oriented architecture applications and services, and cloud computing. The System z Solution Editions are each comprised of various components, such as DB2 and WebSphere, that make up extended integrated stacks.

"IBM is seeing a new market trend for large-scale server consolidation and bringing more capabilities to the mainframe," said Tom Rosamilia, general manager of System z at IBM. "Only the Enterprise Linux Server can provide the environment necessary to handle countless workloads securely and with high availability on such a massive scale." ▮

NEWS BRIEFS

UPDATES

Progress Software has released a new version of its **Progress OpenEdge** software-as-a-service business application development platform. New features in this version of OpenEdge include compliance with data privacy regulations and easier deployment of applications via the Web, Progress executives said . . . ALM company ThoughtWorks Studios has shipped its **Mingle 3.0** agile project manager, adding a new team communications platform called Murmurs. Murmurs stores conversations between team members and instantly associates those dialogs with Mingle project artifacts. Mingle 3.0 is now fully integrated with Tasktop Pro, the enterprise version of the Mylyn ALM integration platform for the Eclipse IDE . . . Q-Mentum has made available **UquoniTest 2.0**, its unit testing library for C++. The new version features the creation of test directories, a mock framework, and the ability to assign attributes to tests, according to Q-Mentum. UquoniTest 2.0 also lets developers run tests on more than one thread and check if project files for different compilers have the same tests . . . Collaboration and tracking software company Atlassian has added OpenSocial dashboards to **JIRA Studio 2.0**, its software development suite. The OpenSocial dashboards let users create dashboards containing information from any of the applications included in JIRA Studio. A new JIRA Query Language enables team members to run complex queries using an SQL-like syntax, Atlassian executives said.

PEOPLE

Non-profit information management organization AIIM (Association for Information and Image Management) has added six new board members to its 2010 board of directors. **Tricia Bush**, **Brent Bussell**, **Timothy Elmore**, **John Newton**, **Jeetu Patel** and **Johannes Scholtes** will all help manage AIIM. Bush is a SharePoint product management director at Microsoft and is responsible for overseeing SharePoint's enterprise content management (ECM) and business intelligence capabilities. Bussell has been with IBM for more than 10 years and currently serves as a marketing executive for the company. Elmore is CIO of BankFund Staff Federal Credit Union, and Newton is CTO at open-source ECM firm Alfresco Software. Patel is the executive vice president of content management company Doculabs, while Scholtes is the founder, president and CEO of information access technology company ZyLAB Technologies . . . MKS has made changes at the executive management level, with **Michael Harris**, currently the company's president and COO, being made its CEO. **Philip Deck**, the company's previous CEO, has been appointed executive chairman and will continue his role as chairman of the board of directors. One of the main reasons behind the move is to allow Deck, who is MKS' largest shareholder, to increase his focus on the strategic aspects of MKS' growth, according to the company . . . **John Bates** has been named CTO and head of corporate development for Progress Software. Previously, Bates had been serving as general manager of Progress' Apama complex event processing platform. He arrived at Progress with the company Apama when Progress acquired it in 2005, and he held the role of president and CTO for Apama . . . **John Nugent** has been named president and CEO of Serena Software. Nugent, who has close to 30 years of experience in the technology industry, according to Serena, previously served as executive vice president of worldwide operations at SAP Business Objects, and he also held executive and senior sales management positions at Oracle for 17 years prior to that. **Jeremy Burton**, who preceded Nugent as Serena's president and CEO, resigned from the company. ■

Microsoft pushed forward on platforms in 2009

Overtures to open source were also made last year

BY DAVID WORTHINGTON

2009 was a momentous and turbulent year in Microsoft's history. It made its entrance into cloud computing, and broke convention by donating source code to Linux. Long-term platform efforts came to fruition, and it aggressively accelerated Silverlight development.

Looking beyond the traditional Windows client/server paradigm, Microsoft rolled out an early version of its Windows Azure Platform. The platform consists of the Windows Azure operating system, as well as a range of services, including a relational database called SQL Azure, and AppFabric, which connects on-premise applications to the cloud.

Community Technology Previews (CTPs) of the Windows Azure Platform were released regularly throughout the year, and Microsoft's Server & Tools Business took charge of product development marketing efforts.

Virtualization also played a key role in Microsoft's decision to contribute its Hyper-V kernel drivers to the Linux community. The drivers improve the performance of the Linux operating system when it is virtualized on Windows Server 2008 Hyper-V, but it was also found to have been in violation of the General Public License.

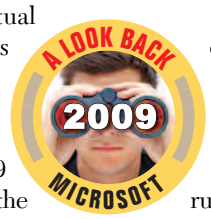
The company embarked on numerous interoperability initiatives throughout the year, including opening Windows Azure to PHP and Java developers, working with the Eclipse Foundation and partners to support Eclipse, participating in the Open Web Foundations' work to incubate Web standards, and establishing the CodePlex Foundation for open-source development on its platforms.

A MATURING STACK

Ultimately, Microsoft is in business to ship software, and it reached major milestones in 2009. Windows 7 and Windows 2008 Server R2 arrived in lockstep, and BizTalk Server 2009 also shipped.

Windows 7, which launched on Oct. 22, introduced new interface paradigms, including a redesigned task bar and touch-screen technology.

Windows 2008 Server R2 extends hardware support, improves power management, includes live migration of Hyper-V virtual machines, and has more advanced support for remote desktops.



BizTalk Server 2009 brought support for the .NET Framework 3.5 SP1, SQL Server 2008, Visual Studio 2008 SP1 and Windows Server 2008. It incorporates failover clustering features from Windows Server and also supports Hyper-V.

Similarly, Microsoft's development platform made significant strides with previews of SQL Server 2008 R2, Visual Studio 2010 and .NET 4.0. Microsoft shipped a Go Live beta version of Visual Studio 2010 in October that included .NET 4.0.

Visual Studio 2010 incorporates new ALM, architecture and testing tools that are designed to help developers automate testing, reproduce bugs, model software, collaborate, and better adhere to requirements.

Microsoft's Security Development Lifecycle team delivered several free tools for secure development within Visual Studio, and advised Windows developers on how to write secure code.

ADVANCING THE BIG THREE

In addition, Visual Studio 2010 includes .NET 4.0, which integrates aspects of Windows Communication Foundation with Windows Workflow Foundation, and also delivers a major new release of ASP.NET.

ASP.NET 4.0 addresses longstanding pain points in Web Forms development and introduces significant client-side functionality to ASP.NET AJAX. Further, a Model-View-Controller pattern was introduced to encourage the creation of higher-quality software through greater componentization and testability.

The .NET framework assumed a broader position when the company launched Silverlight 3, a streamlined implementation of the framework for the Web, in July.

Silverlight 3 introduced a component model for third-party development, new multimedia capabilities, and the ability to run applications offline. Microsoft shipped its Expression 3.0 tooling suite to support Silverlight; Expression Blend 3.0 can create a workflow between developers and designers.

After the release of Silverlight 3, Microsoft quickly moved toward Silverlight 4. Silverlight 4 gives developers access to local resources, including hardware, as well as Windows 7 APIs and legacy applications through Component Object Model support.

Lastly, Microsoft R2 delivered a beta of SQL Server 2008 R2. SQL Server 2008 R2 (formerly codenamed "Kilimanjaro") enables managed business intelligence solutions to be created from transactional and stored data.

A future edition of SQL Server will incorporate Microsoft's "Oslo" technology for model driven development. The company shipped a CTP of those technologies, which are now known as "SQL Server Modeling," in early November. They include its Quadrant modeling tool, "M" modeling language, and a modeling language repository.

Those technologies will be incorporated throughout the Microsoft development stack, including Visual Studio, after they ship.

All in all, Microsoft laid the groundwork for its platforms for years to come. That work will change how Windows and .NET developers create software, and the company's burgeoning openness toward interoperability and open-

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Borland acquisition the big news in ALM for 2009

BY JEFF FEINMAN

One of the biggest stories in the ALM market this year was the consumption of a long-time life-cycle management staple.

Borland Software, which for years had a string of questionable executive decisions and a frequently changing message, was bought by legacy modernization company Micro Focus for approximately US$75 million in May. Industry experts said that while Micro Focus would serve as a good home for Borland's ALM products, Borland's best software development products were sold off to Embarcadero in the summer of 2008.

Aside from the Borland news, most ALM companies continued to update software and do what they could in an uncertain economy. CollabNet changed the name of its SourceForge collaboration software to TeamForge to reflect larger portions of software being created by distributed teams. The company also introduced dynamic planning into TeamForge, which lets development teams manage agile projects in one user interface.

Electric Cloud integrated its ElectricCommander build tester and ElectricAccelerator parallel building software with Amazon's Elastic Compute Cloud environment, opening the cloud to development and test teams. Electric Cloud also added language localization, multiple time zone scheduling options, and continuous integration in a new version of ElectricCommander.

One of Kovair Software's big moves was redesigning the UI of its flagship, Kovair Global Lifecycle. The company also released software-as-a-service versions of its ALM products.

MKS, meanwhile, upgraded its Integrity 2009 platform with new reporting capabilities and dashboards that can be tailored to specific roles.

Rally Software acquired 6th Sense Analytics, a provider of on-demand metrics products. Rally executives said the acquisition provides Rally customers with more access to project data, and it improves agile development reporting.

Adding an open API to its Surround SCM 2010 software configuration manager was a main objective for Seapine Software, as the company added an API for writing applications that access branches and repositories on the Surround SCM Server. Seapine's TestTrack application testing product line brought in the new TestTrack RM requirements manager.

Serena Software continued to push into business process management, adding LDAP integration and new administration capabilities to its Business Mashups software. The company also released a software-as-a-service agile development product with Agile On Demand.

Urbancode added new command-line features and integrations with source code analyzers to its AnthillPro continuous integration software. ▮

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Test/QA market saw continued demand in 2009

BY JEFF FEINMAN

There has been no shortage in demand for testing products and services this year, says longtime security consultant Rex Black.

"Unlike previous downturns, where testing was cut heavily relative to other IT activities, we saw a lot less of that in 2009," said Black, president of Rex Black Consulting, a security group.

Early in the year, CAST Software added new dashboard views into its Application Intelligence platform, bringing a code view that shows object source code and information about the code.

Compuware's testing business unit saw a major overhaul in 2009 as the company sold its existing testing and QA product line to Micro Focus for US$80 million. It then snatched up performance management company Gomez for $295 million. Compuware executives said Gomez's offerings give Compuware a larger focus on on-demand application performance monitoring than its previous tools did.

dynaTrace, meanwhile, created a free AJAX performance analyzer to diagnose AJAX performance problems. It also launched the dynaTrace Community Portal. The portal offers best practices, training and forums to help testers strengthen their application performance.

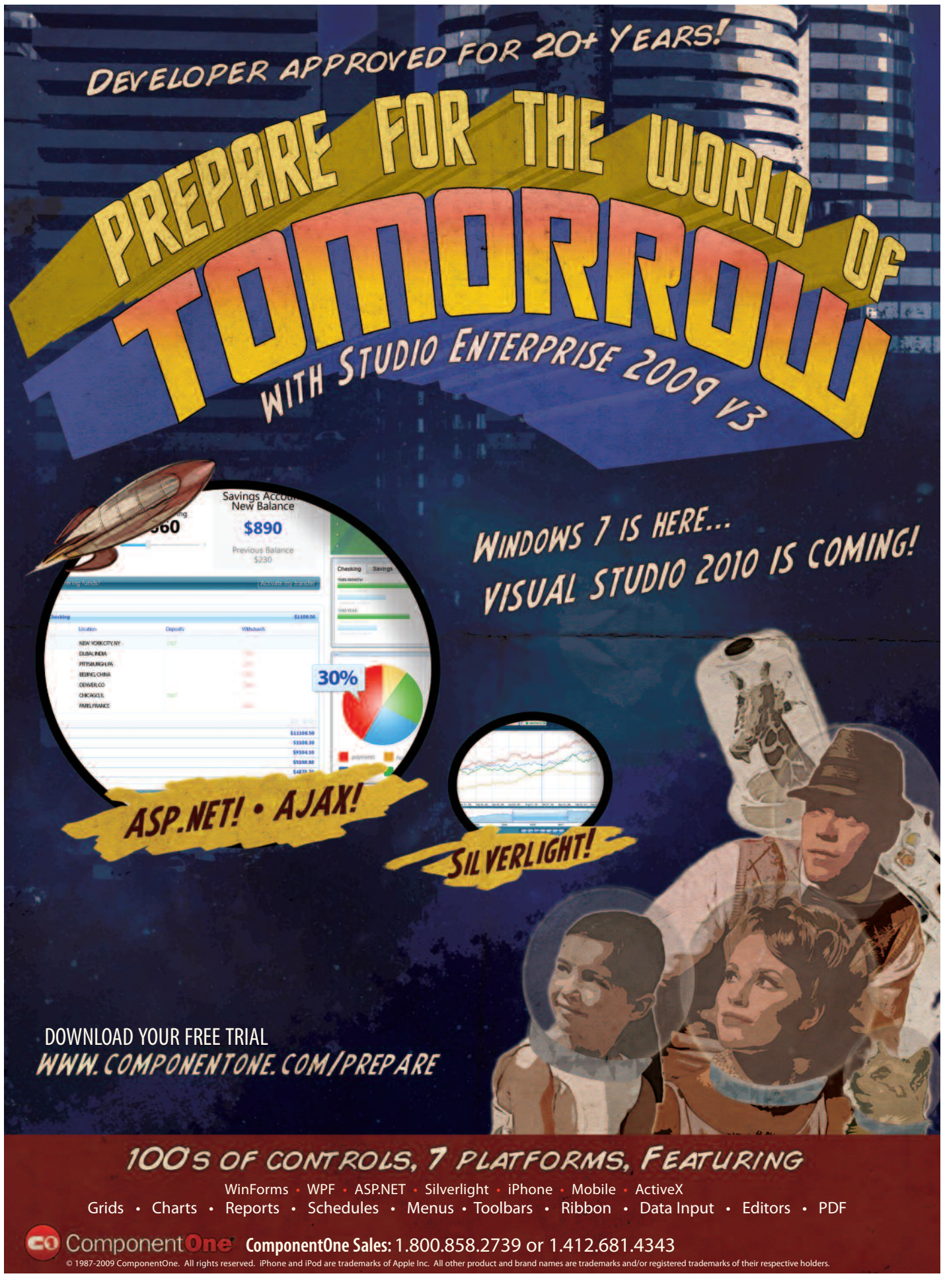
Hex-Rays added stronger integration with 64-bit arithmetic in version 1.1 of its namesake decompiler, along with the ability to handle floating-point instructions such as conversions. The company updated its IDA Pro debugger with a moveable windows-based user interface that offers stack views and the ability to display data in multiple formats.

Hewlett-Packard focused on better testing of Web 2.0 applications in version 9.5 of its LoadRunner load testing software. HP executives said LoadRunner also features Protocol Advisor, which reduces test setup time by automatically picking which protocols are used in an application.

iTKO revamped its LISA product suite with automated modeling and simulation of development resources into virtual tests. This, according to the company, provides realistic simulation of a production environment's behavior. iTKO also reached an agreement with HP to have HP resell its LISA Virtualize testing virtualization software.

Progress Software released Actional 8.0, the first version of Actional to incorporate the service-oriented architecture quality management and testing tools that the company acquired from MindReef in 2008. The release also brought Actional's existing production-side transaction tracking capabilities into the development phase.

TotalView added a feature called Red Zones, which prevents developers from writing programs that don't fit in a particular memory allocation, into a new version of its MemoryScape memory analyzer. The company also reached an agreement with IBM to make available the TotalView debugger on IBM's Blue Gene/P supercomputer. ▮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By next year, the average car will require over 100 million lines of software code, and a commercial airplane, over 1 billion. It's approaching the point where a car or a plane isn't simply a car or a plane anymore. What makes them truly unique is the underlying software—the invisible thread—that infuses them with intelligence. It's no wonder then that fully 66% of the products developed in the past year included some kind of embedded software.

Today, every company needs to consider software a core strategic business asset. Unfortunately, 41% of software projects fail to deliver the expected business value and ROI. Only IBM has the experience, the resources and the solutions to build more effective software design and delivery processes for the world's leading businesses. So they can foster collaboration, automate workflows, report progress against goals and improve on results.

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ObjectBuilders makes sure apps follow their specifications

BY DAVID WORTHINGTON

Developers create specification documents to decide what is necessary to effectively implement software, but coders can easily diverge from it. ObjectBuilders believes the latest edition of its LiveApp Player composite application assembly tool suite will narrow the gap between specifications and actual applications.

LiveApp Player Suite 11.4, expected to be released on Jan. 7, introduces new documentation, prototyping and storyboarding capabilities designed to make developers more efficient.

The suite is comprised of an interface designer, a data modeler that creates an abstract layer that uses adapters to integrate applications and services, and a build tool that configures actions and validations on top of those components, said CEO Robert Schmitter. The process doesn't involve coding, and there is no code generation or control logic.

XML documents are produced for each application module and are loaded together with a client "player," which is written in C, Schmitter explained. "Basically, it works how [Microsoft] Excel or Word would work. You don't see the control logic, but people write sophisticated things in Excel that are like borderline applications." The XML files use a specialized schema that ObjectBuilders created.

The suite incorporates business process management, business rules, content management and the presentation layer, and has modules for workflows and events. "The modules are not best of breed (a large BPM company has more features), but mid-sized companies can create applications without a big-iron budget," said Joseph Brophy, ObjectBuilders' vice president of business development.

LiveApp 11.4 allows software architects or business analysts to design applications in the suite's specification tool, and it generates the application documents on the back end. The developers select the data that they need, and the collection process builds application screens on the back end, Schmitter said.

"If the developer goes in and updates the application, the specification document changes automatically…We want to close the gap between the specification document and what is produced on the back end," Schmitter added.

An updated prototyping tool also helps drive developer efficiency. "We needed to enhance the rapid prototyping ability of the product," Schmitter said. It now generates the non-visual components of the application, including business objects and the database, as a user interface is created, he explained.

The storyboarding utility works in much the same way. When a developer creates a prototype of a transition between two screens, for instance, the information goes into XML documents to assemble the applications. "It's a round trip of modeling the application into existence," said Schmitter.

LiveApp Player Suite 11.4 has a base price of US$85,000 for a developer license and for a server license for a machine with up to four CPUs with unlimited client licenses. ■

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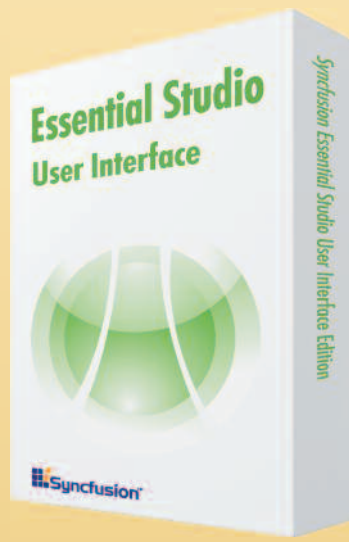

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Gaiaware provides AJAX controls for Web app creation

BY JEFF FEINMAN

Norwegian company Gaiaware is trying to make the creation of AJAX applications easier on the ASP.NET platform.

Gaia Ajax, Gaiaware's ASP.NET AJAX library, provides 41 Web UI controls for developers to use in creating object-oriented Web applications using a managed language such as C# or VB.NET, according to the company. Managed .NET code, a differentiation created by Microsoft to identify code running under the .NET Common Language Runtime, makes it much easier for developers to maintain business applications because developers don't have to worry about smaller details like browser compatibility, said Stian Solberg, cofounder of Gaiaware. Additionally, developers can check the compile time of their code with managed code, he said.

Gaia Ajax 3.6, released in early December, introduces DRIMR (Dynamic Removals, Inserts, Moves and Replacements), a technology that will remove and reuse controls without having to refresh the page.

In discussing the benefits of DRIMR, Solberg said that using ASP.NET AJAX can result in using large amounts of data.

"The basic concept of ASP.NET AJAX UpdatePanels is that you surround an area where you want to update HTML so you don't disrupt the whole page, and this often leads to writing unnecessary HTML," he said. "But now, with DRIMR, because we've built our own AJAX engine, we are able to insert controls anywhere in the page without re-rendering."

Another new feature in Gaia Ajax 3.6 is GridView, which Solberg called a premier example of the DRIMR technology as it enables an advanced GridView for ASP.NET. It allows developers to carry out operations like filtering, sorting, selections, deletions and updates.

When asked about difficulties in building AJAX applications using ASP.NET, Solberg said there are a number of challenges with how Microsoft has built their ASP.NET AJAX framework.

"You often need to combine JavaScript on the client, exposing separate JSON services to consume them from the client in combination with server-side logic," he said. "Gaia has a simple model where you only do things in one place, at the server."

Solberg added that when he and the other founders began working with ASP.NET AJAX, it was very hard to maintain their Web applications because of the reasons above. That was the primary reason for creating a "little helper library" to alleviate those issues.

Gaia Ajax is offered as a dual license, so it can be used to build open-source Web applications or commercial applications. A 12-month professional developer subscription, which includes unlimited deployment and version updates, is priced at US$475. ▮

The year 2009 in 140 characters or less

◂ continued from page 1

grams, are still evolving.

Oracle Prevailed. Sun's pending acquisition by Oracle appeared to be a foregone conclusion by mid-December, with the only hang up appearing to be resolving concerns about the fate of the MySQL database, a relative newcomer to Sun's product stable. The deal, which gives the notoriously closed-source software giant control of some of the industry's biggest open platforms, particularly Java, has moved forward with little comment by pundits or competitors.

Java and .NET Matured. We've now seen several years in a row with only minor, incremental changes to Java and .NET. In the case of Java, it may be that its major stakeholders are otherwise occupied. In the case of .NET, it may because Microsoft is running out of ideas. Both platforms are solid and successful, and there's little need for drastic evolution or exciting new features, and that's good, because none are expected in 2010 either.

Hadoop and Spring Evolved. In the open-source world, the biggest news (beyond Apache's 10th anniversary) has been the rapid rise of Hadoop and the dominance of Spring. Both are Java application frameworks: Hadoop is for large-scale data-intensive distributed computing and storage; Spring is for building Web applications. VMware's purchase of SpringSource demonstrated the increasing value that app frameworks deliver to developers.

Windows 7 Launched. Windows Vista wasn't as bad as the chatter made it out to be, but to many consumers, it was a giant step backwards from Windows XP and for Microsoft. Worse, Microsoft didn't present a compelling upgrade narrative for enterprise users. Vista's poor reputation presented a drag on hardware and software sellers alike. With Windows 7, Microsoft appears to have reset expectations, and customers are no longer actively avoiding system upgrades. The bad news: Customers aren't clamoring to upgrade to Windows 7 either.

iPhone Dominated. With more than 100,000 apps in its App Store, Apple has redefined the mobile platform. In 2009, Apple gained new competitors from a resurgent RIM (maker of the BlackBerry) and Palm, and it saw the launch of the Google Android platform. Despite the new choices and copycat app stores, Apple continued to dominate a fast-growing field that's created many opportunities for enthusiast programmers and established ISVs alike. The smartphone market—and Apple's dominance—are both going to grow significantly in 2010.

Netbooks Penetrated. Itty-bitty screens, unusable keyboards, terrible touchpads, slow processors: While they didn't make a big impact on the corporate scene, netbooks made a huge impression in the consumer market. The benefits for casual users are obvious: Netbooks are inexpensive (vital during an economic downturn), very lightweight and run most Web applications nicely. In 2010, as more netbooks are sold with 3G capabilities, enterprise developers will need to begin testing and targeting apps to run on that platform.

Silverlight Beckoned. Didn't Flash win the Rich Internet Applications wars? Evidently Microsoft never got Adobe's memo, because it keeps pushing Silverlight. Version 1 was interesting, version 2 was better, but the third time's the charm. .NET developers seemed to like the familiarity of Silverlight 3 and its Visual Studio tools, and in 2009 they flocked to the platform. What Silverlight lacks is sheer ubiquity: Flash runtimes are available on many, many more platforms than Silverlight runtimes. What Microsoft possesses, though, is cash and clout. Expect Silverlight 4, newly announced, to grab mindshare from Flash in 2010.

The Cloud Troika Solidified. Cloud computing has earned its capital C: the Cloud takes its place alongside the Web and the Internet. The Cloud gained respect in 2009, as cash-strapped businesses found cloudsourcing to be preferable to building out data centers. The paradigm also proved itself for mashups, and for distributed development and deployment teams. Also clear in 2009 is that the Cloud is three clouds, with Amazon dominating the field, and Google and Saleforce.com offering respectable and attractive alternatives.

Google Prospered. Throughout the year, Google dominated the conversation more than any single vendor—certainly more than IBM, Oracle or Sun, frequently more than Microsoft, and perhaps only challenged by Apple. Whether it was its sheer domination of search and Internet advertising, its strong Web position, or its new Chrome browser, Android mobile platform, and forthcoming ChromeOS, the best word to describe Google is "relentless." Google is certainly the biggest new player of the last decade, and its work in 2009 showed that despite the early whiffs of discontentment with its power, the company is setting the IT agenda for many consumers and enterprises—and scaring the heck out of its increasing horde of competitors, from software and hardware companies to media conglomerates. ▮

First big business, now big data

Open-source software increasingly used to take on enterprise issues

BY ALEX HANDY

To properly assess the state of open-source software in 2009, one would have to gather millions of code commits and project releases. Open source isn't a buzz word or even a type of software; it has become a new way of doing business in software.

In September, the Linux Foundation released the findings of its "Who Writes Linux" survey. The results found that Linux is seeing contributions from hundreds of thousands of different users, and that pool of contributors is still growing at an encouraging rate, building on over 10 years of consistent evolution and expansion.

The Apache Foundation celebrated 10 years, and the Linux kernel got a new scheduler. The OpenJDK continued to push toward a truly GPL Java, and the Apache Harmony project was used in commercial products from IBM.

Even Microsoft contributed to open-source projects this year, both by joining the Apache Foundation and by contributing actual code to the Linux kernel. While that code was only to enable Microsoft's virtualization products when running on and with Linux, it was still a monumental contribution despite lingering questions over the GPL's jurisdiction over said contributions.

Speaking of virtualization, the two titans of that market, Citrix and VMware, both found themselves out in the cold as the Linux Foundation endorsed the open-source Kernel Virtualization Module as the new standard way to virtualize machines with Linux. It was a blow mostly to Citrix, which had been trying to win back XenSource fans who had been alienated when Xen went commercial. To make amends, Citrix began giving away XenSource for free.

BIG DATA

It's almost impossible to talk about software development in 2009 without talking about clouds. As analysts and developers alike look further into cloud computing, it has become clear that a new stack of software is needed. Built on virtualization and scalable data structures, this new stack is relatively nebulous at present. But there is one major open-source project that could become an indispensable part of the cloud stack.

The Apache Hadoop project is already the most popular current project at Apache, according to president of the Apache Foundation, Justin Erenkrantz, due in part to its broad underbelly of sub-projects.

While other cloud projects focus on solving individual developer problems, like syncing databases and scaling code, Hadoop is a holistic solution to cloud development problems. Developers have for years been writing their own batch processing environments, adding scalable elements, and backing them with distributed file systems. Due to the inherent difficulty in solving all of these problems, the norm for years has been to build each of these components only as much as is needed to get the job done.

But Hadoop takes on all these challenges and more. While Hadoop includes more than just cluster controls and a distributed file system, it is these two elements that, when used, remove the largest burden on developers. With Hadoop in place, a company can end its reliance on nightly batch systems in silos.

Perhaps the most interesting and exciting thing about Hadoop for 2010 is that its creator, Doug Cutting, recently joined the Hadoop startup Cloudera because he was hoping to help users who weren't just building search engines. Cutting said that Hadoop's users are continually finding new ways to apply the system to their problems, which keeps him occupied with new ideas and use cases. While some companies use Hadoop to analyze logs, others use it to build the basis for a scalable machine-learning environment.

And that is the calling card of an up-and-coming open-source project: acceleration and variant usage. Just as Linux usage grew in the late 1990s and early 2000s to include users in almost every major industry, Hadoop is spreading beyond search and data management.

But Hadoop is different in that it is almost useless to the average human. Hadoop is specifically built to handle data sets so large that they could only come from enterprises, governments and researchers. And that is the true sign of open-source's maturity: Hadoop is already being used to solve problems for which no commercial solution exists. ▮

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Java 2009: The language moves to the platform

BY ALEX HANDY

Any discussion of Java in 2009 must begin with acquisitions. Between the now-stalled grab for Sun made by Oracle, and VMware's unexpected purchase of SpringSource, two of the most influential companies in Java are now parts of larger entities.

The real question behind these acquisitions is which company is more important to Java. Traditionally, Sun has been the big company on the hill watching over the village of Java. But in more recent years, SpringSource's Spring Framework, along with the company's acquisition of Covalent (the largest service and support group for the Apache HTTP Server and Apache Tomcat), had placed Rod Johnson's company at the forefront of Java. With VMware now controlling those aspects of the SpringSource business, and the Eclipse Foundation continuing to expand the scope of its hosted projects, the future center of gravity for Java may no longer be at Sun.

Meanwhile, IBM, instead of growing its Java business through acquisition, decided to grow it through open source. IBM continued to offer its own version of the Apache Geronimo project as WebSphere Community Edition. The company also began using Apache Harmony libraries and components in commercial products, a sure sign that the world's oldest computing company is confident in Harmony despite Sun's refusal to make available the verification and certification tools that could give the Java runtime an official stamp of approval.

OTHER BIG CHANGES

It is perhaps appropriate that this is also the year when a fundamental change to the structure of Java was announced: closures. Mark Reinhold, principal engineer at Sun and member of the OpenJDK guidance committee, said that closures will make their first appearance in a preliminary form when the OpenJDK, Java SE 7, arrives next fall.

Reinhold has said that this is a move that comes from his LISPy upbringing, and it will bring the language more in line with the advanced programming ideas embodied in that and other LISP-like languages.

Perhaps more important for Java was the decision by the OpenJDK guidance committee to push the project through the JCP before final release. Until this decision was made, the JCP was almost entirely left out of the OpenJDK process. The decision to first pass the OpenJDK through the JCP was blamed for the delay in the OpenJDK's completion: The project tacked on another year of work to accommodate the JCP.

While work on the language and platform continues, the Oracle takeover of Sun remains in limbo, as the European Commission holds up the deal over antitrust issues surrounding the open-source MySQL database. The acquisition, the EC fears, would give Oracle an unfair advantage in the database market by adding MySQL to its own line, as well as removing a "competitive constraint" to Oracle's pricing and marketing.

But Eben Moglen, founder of the Software Freedom Law Center, wrote a letter in early December to the EC in support of the acquisition, saying that the GNU General Public License under which MySQL is released offers enough protection to enable individuals and organizations not tied to Oracle to con-

Java EE 6 into the wild

◄ continued from page 1

version will entitle developers to free software updates and bug fixes, said Kincaid.

"GlassFish Enterprise Server v3 goes much further with its modular architecture, management and monitoring capabilities, and update center console," he said.

GlassFish is now built on an OSGi microkernel, the Apache Felix project, said Kincaid. "Only the necessary modules are loaded at startup. As applications are deployed, only the required modules are loaded," he said.

NetBeans 6.8, on the other hand, includes new features that aren't just about Java. NetBeans 6.8 is the first version of the IDE to support PHP 5.3, and that language is growing in popularity among NetBeans users, said David Folk, director of developer tools engineering at Sun. He said that the new version includes packaging and deployment tools to make building applications easier.

"We provide support for all the Java EE 6 libraries when you're working with [build management tool] Maven," said Folk, highlighting NetBeans 6.8's enhanced Ant and Maven integrations.

NetBeans 6.8 is available for free online, while the GlassFish Enterprise Application Server v3 is included with the Java EE 6 release. ▮

Electric Cloud tool narrows builds

Code changes don't require entire stack to be rebuilt

BY JEFF FEINMAN

Electric Cloud is trying to help developers eliminate unnecessary parts of software builds without sacrificing the quality of those builds.

SparkBuild, released in December, is a free standalone software builder that is based on the concept of what Electric Cloud calls "build avoidance." SparkBuild can use Electric Cloud's ElectricAccelerator build accelerator and ElectricInsight build analyzer to identify parts of a build that aren't relevant to the change, so as to skip them. It tries to help developers avoid unnecessary work by automatically reducing a full build to the smallest subset of critical changes.

Typically in a software build, there are many dependencies between applications and components, which might necessitate a full rebuild if something needs to be changed. But Electric Cloud's solution can identify the dependencies among software parts and show a developer only parts that would need to be built.

Usman Muzaffar, vice president of product management for Electric Cloud, claimed that SparkBuild can make developer builds 10 times faster. He cautioned that although many developers already do incremental or partial builds, they take risks with the code.

"Every time they're doing those [partial builds], they're faced with an ugly choice," Muzaffar said. "Either they can build the slow and safe way—making sure all parts are put together actively and correctly—or the fast and dangerous way—taking some shortcuts, but at the risk of not really knowing what just got built and not really being guaranteed you're building the right stuff. SparkBuild can make developer builds both fast and safe, and get you much faster performance on average."

Incremental building can be expensive and can take between 10 to 20 minutes to run, according to Scott Castle, senior product manager for Electric Cloud. SparkBuild looks to lower that time and cost.

"One of my software developers here at Electric Cloud came up with this idea because he has a very similar problem," Castle said. "Our software stack is made up of about 20 components. If I'm working on one component, I can't afford to rebuild the whole product. Figuring out what to rebuild takes so long that I really almost have to resort to building this stuff by hand. And that defeats the whole purpose of having a build tool."

Information such as build times and how components are functioning is displayed in a GUI, which Muzaffar said can be used to pinpoint errors down to an individual line of code.

The SparkBuild website has blog posts, forums and training videos to help developers learn about SparkBuild. ■

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Microsoft agreed to offer a choice of browsers to Windows users.

EC OK'S BROWSER DEAL

◄ continued from page 1

ward to building on the dialogue and trust that has been established between Microsoft and the Commission, and to extending our industry leadership on interoperability."

Neelie Kroes, the EC's competition commissioner, said that customers would benefit by having free choice about which browser they can use, improving their experience on the Internet, and furthering the industry's incentive to innovative with better browsers.

Over the past decade, the EC's antitrust actions have compelled Microsoft to share interoperability information with its competitors and to modify Windows, and they have cost the company $2.3 billion in fines levied against it.

Those actions originated from the EU's 2004 antitrust ruling against the company, which was upheld in September 2007 by the European Court of First Instance in Luxembourg, the EU's second-highest court. Microsoft was found to have abused its dominant market position. ■

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FROM THE EDITORS

Looking back at 2009

The year that just concluded was a historic year of change. On the world stage, 2009 began with a new president of the United States and ended with the major United Nations Climate Change Conference. Throughout the year, wars raged around the globe, while the worldwide economy began to recover from recession.

While the software development world saw continuing innovation and evolution, there were no seismic revolutions, no drastic changes of paradigm nor emerging models of corporate computing. Instead, change was incremental. The three biggest stories in 2009 representing that continuum of change were cloud computing, mobile applications development, and the future of Java.

The emergence of the cloud as a serious enterprise development and deployment platform was precipitated by a perfect storm of economic necessity and technological innovation. The recession made cloud computing desirable for CIOs who preferred to rent storage and computing power instead of investing in capital-intensive infrastructure. The platforms themselves were evolved mainly by Amazon.com, but with strong supporting roles played by Google and Salesforce.com. Microsoft's forthcoming Windows Azure gave the cloud additional legitimacy.

While the cloud thought big, mobile computing thought small, thanks to the rise of the "mobile app" as a viable business model. Just when we thought that the full-featured portable browser would become the hub of the mobile Internet, local apps—popularized by the runaway success of Apple's iPhone and App Store—became the preferred way to access data on small devices.

The iPhone inspired rivals, from the open-source Android to a resurgent Palm. Meanwhile, apps flew off the electronic shelves, enthusiast programmers became millionaires, and the micro browser became irrelevant.

And then there's Java, and the rest of Sun Microsystems' software portfolio, including Solaris, OpenOffice and, most recently, MySQL.

The burning question as Sun's business faltered: What would happen to Java and the other products owned by the company that "put the dot in dot-com"? During 2009 we learned the answer: Sun will be purchased by hyper-competitive Oracle. What will that mean for Java stalwarts such as IBM and SAP? We'll all find out after the deal closes.

Looking forward to 2010

Over the next 12 months, the three big trends mentioned above will play out. All will be significant throughout the year.

Two other stories we're following:

Agile computing: It's not just a manifesto anymore. Adoption is becoming widespread, with many development shops religious about Scrum, Extreme Programming or some other methodology. Other shops are guided more by the agile philosophy and have chosen elements of various methodologies to create their own lean practices.

Where does agile go from here? Does it just fade into a set of best practices? Indeed, is there even an agile movement any longer? We'll see changes and evolution here in 2010.

Hybrid applications beat Web applications. In the mobile space, that's playing itself out with native apps for smartphones. On standard desktop and notebook computers, we're seeing a resurgence in rich Internet applications built on Internet-aware runtimes.

The leader in the RIA market, of course, is Flash, but Microsoft's Silverlight platform is coming on strong as a way of delivering Internet applications that can leverage local processing and, increasingly, local storage and other resources. With Silverlight 4 new on the scene, and with changes coming to Adobe's Flash and AIR, more and more client code will be built on RIAs instead of JavaScript or pure native platforms.

It's going to be an interesting year, and not the least because our Feb. 15, 2010, issue will celebrate our 10th anniversary.

Happy New Year from everyone at SD Times. ▮

LETTERS TO THE EDITOR

Scala: Good transitional language

I believe that comparing Scala with Ruby would give too much honor to Ruby. I'd suggest comparing Ruby with PHP. That's its niche. Of course Ruby is more modern, concise and consistent. But it does not go far.

Scala does. It is the 21st century; paradigms are shifting, we are gradually switching to casual multi-threading. What kind of languages would suit better? Functional ones.

The problem is engineers don't get them. But they do get Scala, and Scala is a good transitional language. It allows people to write as casually as they do in Java, and at the same time it gives more freedom regarding functional style and multi-threaded programming. Maybe what you did 30 years ago could be still better done in Fortran, COBOL and BASIC. Who knows? But it is 2010, and it's time to move on.

Vlad Patryshev

Editor's note: The following letter is reprinted from the Dec. 1 issue, with a reply from Andrew Binstock following.

Scala is a very nice addition to the JVM language toolkit, but some of your facts are way off the mark.

Both JRuby and Jython represent non-Java JVM languages and have vastly more TIOBE-share than Scala. Ruby alone represents more users worldwide (albeit not necessarily on the JVM) than Scala, Clojure and Groovy combined.

The performance of Scala is certainly solid, but it's not as fast as Java. It may sometimes allow more elegant (and perhaps more efficient) representations of certain algorithms, but it can't do anything Java can't do (and it can't do many things Java can do).

Your comparison ("Scala Sings," Nov. 1, p. 41) with "Java 6 client" is also incorrect, since Scala running on the client VM would degrade just as much as Java does. Actors are a good way to do concurrency, but Scala has only "included them in the language" by having them available as part of Scala's runtime libraries and by having a syntax for asynchronous message dispatches. The same could be done to any of the other languages with almost no effort...but the other languages are actually in better shape, since you can use whatever actor framework suits you rather than the one set up by the language authors.

Excitement about Scala is not misplaced; it is a strong contender to compete with Java as the leading statically typed application language on the JVM. But breathless assertions about its performance, adoption and potential should be tempered with a dose of facts.

Charles Oliver Nutter

Andrew Binstock replies: "Both JRuby and Jython represent non-JVM languages and have vastly more TIOBE share than Scala."

Did you actually go to the Tiobe site before writing the above? There is no JVM language that is listed ahead of Scala, other than Java. Exactly as I stated. If you disagree with Tiobe, post numbers from a reputable third party. I'll be happy to consider them. Till then, we have Tiobe.

"Your comparison with 'Java 6 client' is also incorrect, since Scala running on the client VM would degrade just as much as Java does."

Why? Can't Scala generate faster bytecodes than javac? Unfortunately, since I wrote this column, Alioth has changed the list of Java programs they test and no longer publish benchmarks for the Java client. And archive.org does not have the recent benchmarks archived. So you'll have to take me at my word that I checked it just before I wrote the piece. To extend my point on better code generations, here is a link to an Alioth benchmark where Scala comes in ahead of one version of Java 6 server and behind another:(shootout.alioth.debian.org/u32q/benchmark.php?test=spectralnorm?=all&box=1).

In both cases, the numbers are very close, making Scala the fastest non-Java JVM language.

Re: actors in Scala, you wrote: "The other languages are actually in better shape, since you can use whatever actor framework suits you, rather than the one set up by the language authors."

Not so. Any actor framework that is written for the JVM is just as accessible from Scala as it would be from Java (or other JVM languages).

"Assertions about its performance, adoption and potential should be tempered with a dose of facts." Couldn't agree more. When you find an incorrect fact in the article, please let me know. I'll promptly correct it. For readers' edification: Nutter is the driving force behind another JVM language: JRuby.

WHAT DO YOU THINK?

SD Times welcomes feedback. Letters should include the writer's name, company affiliation and contact information. Letters become the property of BZ Media and may be edited for space and style. Send your thoughts to feedback@bzmedia.com.

Insurance for the cloud

Software developers entering the field of cloud computing may need to reconsider their liability insurance coverage as they shepherd increasing amounts of user data.

Cloud computing is a loose term, but it generally refers to storing user data or applications on a remote server rather than on users' own systems. A 2009 industry study by Coda Research Consultancy estimated that, by 2015, various forms of such software could represent 17% of all information technology spending worldwide.

Consumers benefit from cloud computing because it allows them to forego expensive, all-inclusive software suites and use the Web to selectively purchase the software features they actually use. Consumers can also run Web-based software on less-expensive systems because the processing largely occurs elsewhere.

But there are potential drawbacks as well. Cloud computing necessarily gives the user less control over his or her own data, meaning that the software developer or provider may be the only line of defense for the information. There are risks that developers and data/application hosts should keep in mind.

For example, if developers make privacy the top priority, cloud-computing developers may face those that say they should be liable for the bad behavior of unsavory customers seeking a dark place to host illegal data or viruses.

On the other hand, privacy standards that are too low could make developers liable for data theft against legitimate users, or for putting private data into the hands of advertisers. Developers will also have to handle disruptions or unavailability of data and services to end users.

Do developers have insurance that would cover such risks? Any combination of these situations may lead to consumer lawsuits against cloud-computing providers or developers. Developers, in turn, will likely turn to their liability insurers for support. For that reason, developers would do well to anticipate the arguments that liability insurers commonly make to deny coverage in software-related cases.

The first policy to look to in light of these risks is commercial general liability or a business owner's policy. Those policies are commonly bought by companies of all sizes. The liability portion of those policies provides coverage to the company against lawsuits or claims filed by third parties.

One of the areas covered under such policies is for property damage allegedly caused by the developer's products. Claims alleging damage to hardware are covered under such policies; claims alleging damage to software and data should be covered, but court decisions are somewhat uneven on that question.

Courts have split on the fundamental question of whether data corruption represents "physical damage to tangible property." The common-sense approach holds that, because computers invariably record data by some electrical or mechanical action on a medium, any

Scott Godes and Idan Ivri

corruption must be "physical." But some courts have taken the opposite position.

For risks relating to invasion of privacy and data breaches, another section of general liability or business-owner policies apply: coverage for "personal & advertising injury." Personal & advertising injury coverage applies to alleged liabilities arising out of, among other things, the violation of privacy rights.

If there is a data breach, or private, personal or business information has been disclosed, there may also have been a violation of privacy rights beyond the publication of information to people who should not have it. If so, personal & advertising injury coverage may apply.

A 2009 decision from a federal appeals court in California (Netscape Communications v. Federal Insurance Co.) is favorable to online service providers, holding that personal & advertising injury coverage applied to allegations that an online service provider intercepted and internally disseminated private online communications. That holding applies with equal force to the potential disclosure of information in cloud-computing contexts.

If data was stolen or there was malicious hacking into the cloud, then a criminal/fidelity policy may also provide coverage. Such policies may be designed to address cyber-crime or to offer computer fraud endorsements that add cyber-crime coverage to a more generalized policy.

For risks relating to interruption of service and interruption of business, developers should consider first-party all-risks coverage, which may also be found within a business owner's policy. First-party policies that provide business interruption, business income and contingent business interruption coverage provide protection against losses that could apply to cloud-computing incidents.

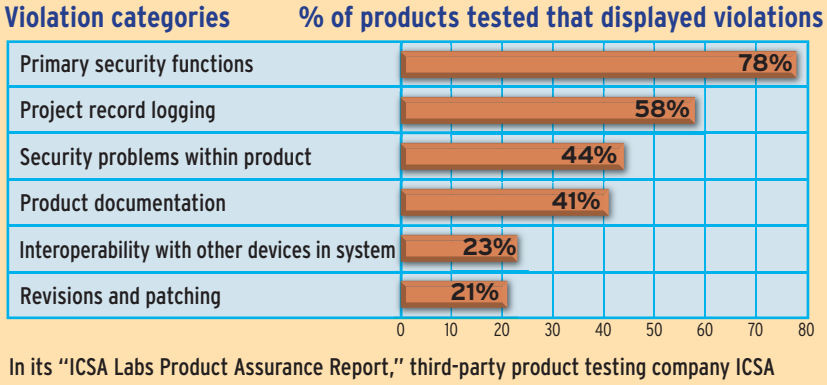
A business' error & omission policy may provide further protection. An error & omission policy should provide coverage for liabilities relating to "professional services," and it could prove valuable in the context of cloud-computing risks.

In sum, cloud computing may represent a new trend in information technology, and a move away from established software brands. As such, it may well be a highly lucrative new market. But with such opportunity comes risk. Policyholders should be familiar with their coverage, become familiar with malware precedents, and be aware of how best to counter arguments that insurers commonly make. ▮

Scott Godes is an attorney with Dickstein Shapiro LLP, and he is the co-head of the firm's Cyber Security Insurance Coverage Initiative and co-chair of the American Bar Association Computer Technology Subcommittee of the Insurance Coverage Committee of the Section

ICSA Labs: Deficiencies found in security products

DATA WATCH



In its "ICSA Labs Product Assurance Report," third-party product testing company ICSA Labs tested security products, including Web application firewalls and anti-malware software, for deficiencies in areas such as primary security functions and record logging. The figures above show what percentage of security products tested revealed violations in such areas, drawing from product certification criteria that ICSA Labs created with the help of industry experts and developers, according to the company.

Source: ICSA Labs

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Driving development with functional tests

As I have pointed out in my recent columns, the world of agile has suddenly become very focused on test-driven development. Within that community, the tug of war between traditional code-then-test and TDD seems to have been won by the TDD practitioners, at least in terms of mind share.

I continue to be surprised how often I hear people who claim to use TDD and then specify that they mean "test first." It's hard to fathom how someone could be doing anything close to TDD if they were not doing test-first, so the additional specification suggests that there are divergent views within TDD regarding exactly what practices the initials stand for.

A comment on my blog inveighed on this very point, trying to get users to refer strictly to the core TDD practices when using the term: Write a failing unit test, write the smallest amount of code that will enable the test to pass, refactor. Using other imagery, it could be stated as: Lather, rinse, repeat. The problem with insisting on this narrow restriction is that even dyed-in-the-wool TDD experts don't adhere without variance to these steps.

For developers hoping to adopt TDD, there are surprisingly few good books on the topic. Kent Beck's seminal work, "Test-Driven Development: By Example," anchored the idea in the agile consciousness. And David Astels' "Test-Driven Development: A Practical Guide," built elegantly on that foundation.

A new title joins these stand-out works. It's the descriptively named "Growing Object-Oriented Software, Guided by Tests," by Steve Freeman and Nat Pryce. It would be my starting point today if I were undertaking TDD. It not only explains the whole testing orientation, but it also shows how to choose tests wisely and use them to move forward according to plan, rather than organically.

Integration Watch

It also has a strong emphasis on the refactoring aspects, with an eye to the kinds of refactoring typical of the TDD approach (a woefully under-discussed topic). Note that for teaching TDD to students new to programming, I would use Jeff Langr's "Agile Java."

As I have worked through these books over the years, I've been chased by doubts. I think TDD has the basic concept correct—in that writing a test first forces a discipline on the developer that improves code quality. If developers could be disciplined enough to plan code thoroughly before writing it, TDD wouldn't be necessary, but as a group we're not, and so it is.

While TDD's concept is valid, I think the implementation is faulty. The steps, as I outlined above, say to write a failing test. No one type of test is specified, but the unit test is universally understood and implemented. This for me is the error. Unit tests are simply too small increments.

Increasingly, I have been testing TDD by writing a failing *functional* test and writing just enough code to make it pass. This is an important distinction. Functional tests are higher level and in general encompass more functionality. Writing good functional tests in the absence of code is an excellent way to capture requirements, explicit and implicit.

The tests use the same techniques as TDD, such as mocks in the test cycle and refactoring afterwards, but the increment of code written is much larger (thereby reducing the constant refactoring). And the shape of the resulting code follows the morphology of the requirements directly.

As I code this way, I have every confidence I am delivering what the customer asked for (to the extent my specs reflect those features). Cédric Beust, who wrote the open-source TestNG framework, pointed out in a recent interview: "Unit tests are a convenience for *you*, the developer, while functional tests are important for your *users*. When I have limited time, I always give priority to writing functional tests. Your duty is to your users, not to your test coverage tools."

By relying on functional tests, I avoid a common problem that derives from an exclusive focus on unit testing: Namely, that while the units work correctly when tested individually, collectively they have defects. (This problem is often recast in the correct assertion that just because you have high code coverage from unit tests, it doesn't mean your code works correctly.)

My increasing preference for functional TDD does not preclude unit testing. I rely on unit tests to verify code after I've written it. For example, unit tests verify that I am handling edge conditions, exception handling and other aspects correctly. And they are invaluable in this capacity. Between the functional and unit tests, I have a high degree of confidence in my code.

In my next column, I will discuss the implementation aspects of what I call "functional TDD" and discuss some of the tools I use to make it work in Java. ▮

Andrew Binstock is the principal analyst at Pacific Data Works. Read his blog at binstock.blogspot.com.

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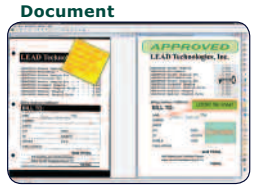

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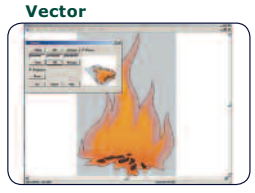

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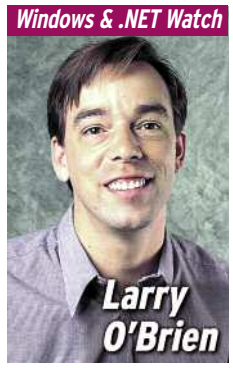
Fun with WPF applications

Silverlight 4 is now available in beta form. I decided to take it for a test drive by implementing some calendars for amateur astronomy. Specifically, I wanted to use Silverlight to calculate and graph the positions of the four Galilean moons of Jupiter, including interesting events like occultations, shadow transits and the position of the Great Red Spot.

The task highlights the advanced display model of WPF/XAML, with a combination of standard controls for setting the date and time parameters, dynamically repositioned and scaled lines for scaling the calendar, and totally dynamic paths for the satellite's positions. Visual Studio 2010 (now in Beta 2) includes a complete visual design surface for Silverlight, allowing me to rough out a design declaratively (including visual prototypes for the curves I wanted to draw).

The Model-View-ViewModel pattern has come to be the de facto standard design for WPF applications. In this pattern, the "Model" retains its standard meaning as those elements relating to the domain. The "View" is also quite familiar as the user interface, but is more passive than the view in the traditional "Model-View-Controller" triad; in MVVM, the View typically relies heavily on the data-binding facilities of the .NET Framework to attach to the "ViewModel," which houses the UI's interaction logic. In this way, the View is almost like a concrete implementation of the ViewModel's abstraction ("almost," because the ViewModel is not a pure abstraction, and the two are not related by class inheritance but by data-binding).



Because the View is so loosely coupled to the ViewModel (at least visibly; the infrastructure for data-binding is complex but hardly ever requires attention), view "stuff" is easy to test. This was especially useful in my application, where one view is animated, and another is a bunch of sine waves superimposed on a ruler-like calendar that needs to be accurate when fully zoomed in.

Just to make things interesting, my Model initially disagreed with other calculators. I cannot deny thinking that I had a time zone problem (in any application that references time in any way, there will at some point be bugs relating to time zones), but tests saved me from countless hours trying to find the problem by judging, "OK, it looks like Io and Ganymede cross on the 17th around 10 UTC. Is that right?" (It turned out that the orbital constants I used were based upon a non-standard epoch. Live by the easy Internet search, die by the easy Internet search.)

I eventually got the basics down and happily spent a few minutes moving the scale slider up and down and watching the orbits compress and expand. But dissatisfaction quickly set in, as the recalculations were not smooth, but had a noticeable jerkiness to them. Time to get those other seven cores off their lazy butts…

In Silverlight, one uses a BackgroundWorker for concurrency. This is a straightforward class that exposes a "DoWork" event whose handler executes on a background thread and events such as "ProgressChanged" and "RunWorkerCompleted" that execute in the thread in which the BackgroundWorker was started.

The reason that recalculation was taking a noticeable amount of time is because my calendar calculates the location of four moons, their shadows, and the Great Red Spot for each row in the calendar's 1000-pixel height. The obvious tactic in terms of processing would be to parallelize the outer loop, which was spinning through all the rows in the calendar. Obvious, but ill advised. On an 8-core machine, a BackgroundWorker for each of the four Galilean moons and another for the Great Red Spot map is likely to be more efficient, as there's much less thread-management overhead and greater coherence. On the other hand, one can imagine recasting the calculations into a form appropriate for implementing in a shader, which could potentially be lightning fast.

As with Windows programs, one can only manipulate the UI within the main thread, exchanging data solely by parameters passed in and out of the "DoWork" handler. This was expected, but I was taken aback that I could not even create unattached UIElement objects in the background. While I could calculate all the points in the moon's orbit in the background thread, I had to pass back all that data, and the instantiation of the corresponding Polyline was done in the main UI thread. It all worked out well enough, but was another instance where the current concurrency model is unsatisfying.

Other than the design surface in VS 2010, I did not use Silverlight 4's new capabilities, such as printing or hosting HTML elements. I was simply having too much fun working with my domain and making a creative interface for it. Isn't that what programming's all about? ▮

Larry O'Brien is a technology consultant, analyst and writer. Read his blog at www.knowing.net.

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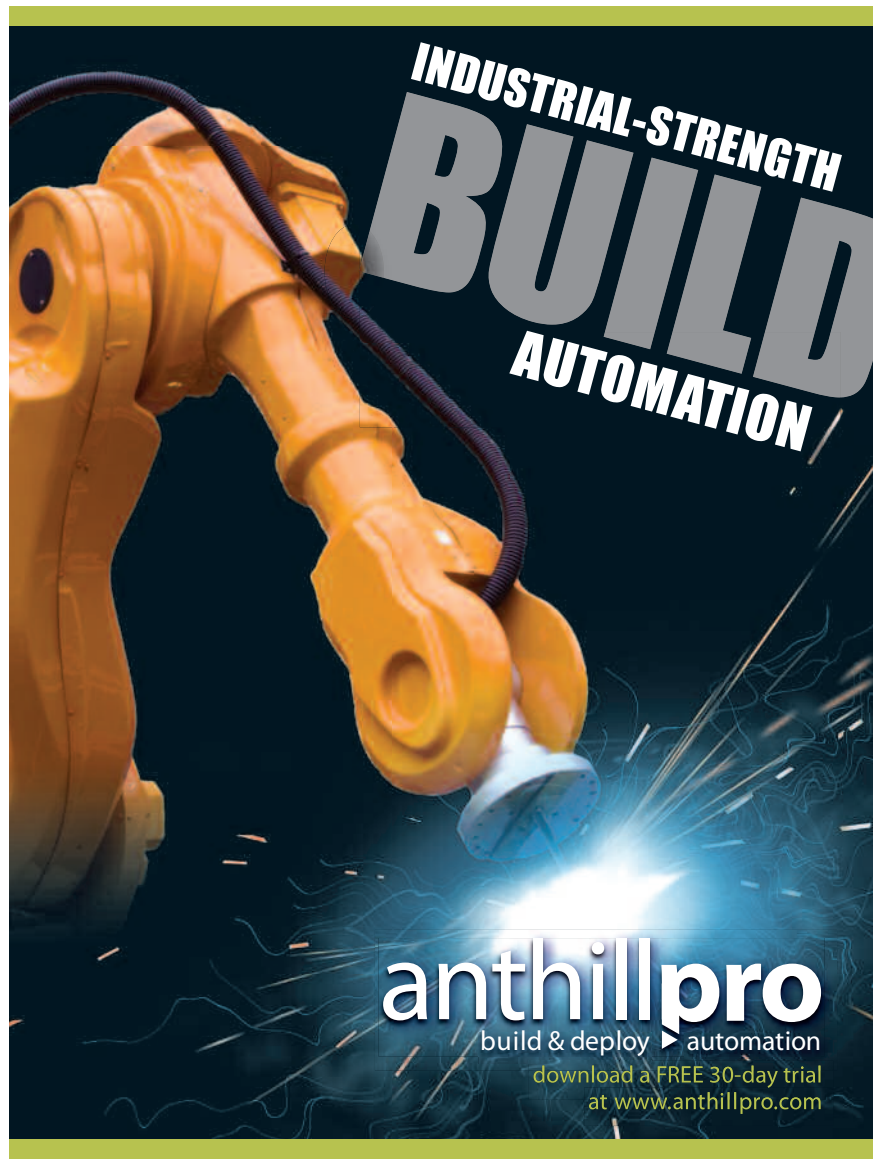

SHORT TAKES

I HAVE A CONFESSION TO MAKE: I'm not the best source of information about some the latest consumer technology trends. So Boxee, an open-source program that streams TV and movies from the Web, caught me a little off guard.

Boxee is really cool and makes it clear that the Web will revolutionize media. Now, D-Link is manufacturing a Boxee Box for your TV. The Box has unlimited storage capacity and Wi-Fi to connect to home networks. There is a lot of media on the Web that I would love to watch on my TV; Time Warner Cable's on-demand service isn't so great.

Boxee is something special. The business model may not be there yet, but there is so much opportunity for it to upend that cable provider subscription model. I'd like more of what I want when I want it, and would be willing to pay à la carte. — *David Worthington*

I'D WAGER THAT A FAIR NUMBER of your programmers are wrestling with carpal tunnel syndrome or repetitive stress injuries. For those that can't type without pain, there is a new idea on the horizon to help save your fingers.

The Peregrine glove will be targeted at video gamers when it ships in February, but this unconventional input device has potential for making typing easier. The Peregrine is a bit like a chording glove: the tip of the thumb to the tip of the forefinger registers as a key press on the keyboard. The tip of the thumb to the side of the middle finger's second knuckle registers a different keyboard press.

The one-handed model can almost accommodate a full keyboard. This is a 1.0 product, and it's not quite ready for use as a typing device, though it can be configured for anyone's hands and gestures. But for US$149, it's the closest you can get to putting your programmers in Neuromancer territory. — *Alex Handy*

SOMETIME IN THE FUTURE, developers working on a project will be able to find others in their organization with domain expertise by finding their profile on a social network, then post to a community board a troublesome piece of code for that person and others to work on, all while commenting live as they go.

Oh, wait… this can be done today!

But the integrations are not smooth, and the social software implementations are not specific to the organization. Yaacov Cohen of Mainsoft expects this to change, as companies start to build out their platforms with social tools from the ground up. "You have to be born to be social; it's harder to pick up later on," he

Artificial Nostalgia

Oh, to have worked or studied at SAIL back in the day. Of course, "in the day" was in the 1970s and early 1980s, when the Stanford Artificial Intelligence Laboratory was in its prime, long before AI became shorthand for "any technology that's 20 years in the future—and always will be."

When SAIL was at the cusp of computer science, as detailed in a recent essay in the New York Times, many researchers truly believed that artificial intelligence was solvable. Creating computers that would think—not merely follow algorithms—was a hard problem, to be sure. But not an impossible dream. The idea that you'd have a computer that would learn how to play chess, and be able to converse with humans well enough to pass the Turing Test, seemed to be a matter of just a few more transistors, a little more memory, choosing the right programming language and writing some better algorithms.

Zeichick's Take

Hard, but solvable.

"Optimism as Artificial Intelligence Pioneers Reunite," written by John Markoff, talks about those glory days when John McCarthy and his team thought that a thinking machine would only take a decade to build. However, as the essay describes, by the mid-1980s, AI seemed further from creating artificial intelligence than ever before.

My own involvement in artificial intelligence comes from about that time. I studied AI a little, and from 1990–1992 I served as editor of AI Expert Magazine. (The publication is now gone, alas, but Google found my old writer's guidelines squirreled away at Carnegie-Mellon University. Talk about a flashback!)

Editing AI Expert was a dream job: getting to hang out with the best and brightest in the AI community, and working with many brilliant computer science researchers as authors, attending conferences, and learning from a blue-ribbon advisory board. Ahh, nirvana.

What's interesting is that many so-called "technologies" that we covered in AI Expert never became part of machine intelligence or artificial intelligence, but instead became part of the mainstream. Expert systems, for example, are a core part of many search engines and data mining systems. Object-oriented programming evolved out of AI. Virtual reality originated in AI research. Natural language processing. Object databases. Vision processing and image recognition. Those are all just software development today.

Of course, not everything we covered in AI Expert hit the jackpot. While neural networks, genetic algorithms and fuzzy logic still live, they're also quite esoteric.

Older computer scientists (heavens, do I now fall into that category?) remember AI's glorious history and myriad accomplishments. We know that although we don't have true artificial intelligence systems, those investments and research in SAIL and other similar projects paid off handsomely, and appear in products and technologies we use every day. I hope that younger generations of developers appreciate where we started—and how far we've come. ▮

Alan Zeichick is editorial director of SD Times. Follow him on Twitter at twitter.com/zeichick. Read his blog at ztrek.blogspot.com.

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Orlando
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Web 3.0 Conf. Jan. 26–27
Santa Clara
MEDIABISTRO
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Macworld 2010 Feb. 9–13
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SPTechCon 2010 Feb. 10–12
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PyCon 2010 (Python Conf.) Feb. 17–25
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us.pycon.org

Enterprise Software Development Conf. March 1–3
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RSA Conf. March 1–5
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Microsoft MIX10 March 15–17
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For a more complete calendar of U.S. software development events, see www.sdtimes.com/calendar.

Information is subject to change. Send news about upcoming events to events@bzmedia.com.

BUSINESS BRIEFS

BUSYBOX BUSY AGAIN

The **Software Freedom Law Center** (SFLC) has filed suit in mid-December against a host of retailers and television manufacturers. The suit alleges that 14 companies are distributing **BusyBox** in their televisions, DVD players and dozens of other devices. The suit accuses these businesses of not complying with the GPL in this distribution. The SFLC filed the suit on behalf of BusyBox coauthor Erik Andersen. Companies named for violations in the suit include **Best Buy**, **Samsung** and **Westinghouse**. ▮

IBM has signed a definitive agreement to acquire **Lombardi**, a provider of business process management software and services, for an undisclosed sum. Executives from the two companies said Lombardi's software complements IBM's enterprise process management software, specifically in IBM WebSphere, and adds automation of various management tasks . . . **Microsoft** has placed Windows Azure development under the direction of its Server & Tools Business (STB) division. Microsoft president Bob Muglia will continue to manage STB, and Windows Azure chief Amitabh Srivastava will be reporting to him as the director of Microsoft's Server & Cloud Division . . . Storage management company **ZL Technologies** refiled its lawsuit against **Gartner**, alleging the analysis firm plays favorites in its Magic Quadrant reports. When the case was previously heard by Judge Jeremy Fogel in November, he dismissed the suit due to Gartner's claims that their reports are based on opinion, and are therefore covered by free speech. The judge did leave open the option to amend the suit, and ZL Technologies did so. ZL's additions include assertions that Gartner claimed its reports were based on research and facts, rather than on author opinions. No court date had been set by press time.

EARNINGS: **Micro Focus** reported that the acquisition of **Borland** and the Testing/ASQ division acquired from **Compuware** added revenue of US$55.3 million for the six months leading up to the end of October. Revenue for the six-month period was $198.4 million, a 46% increase from $135.6 million in the same period of 2008. ▮

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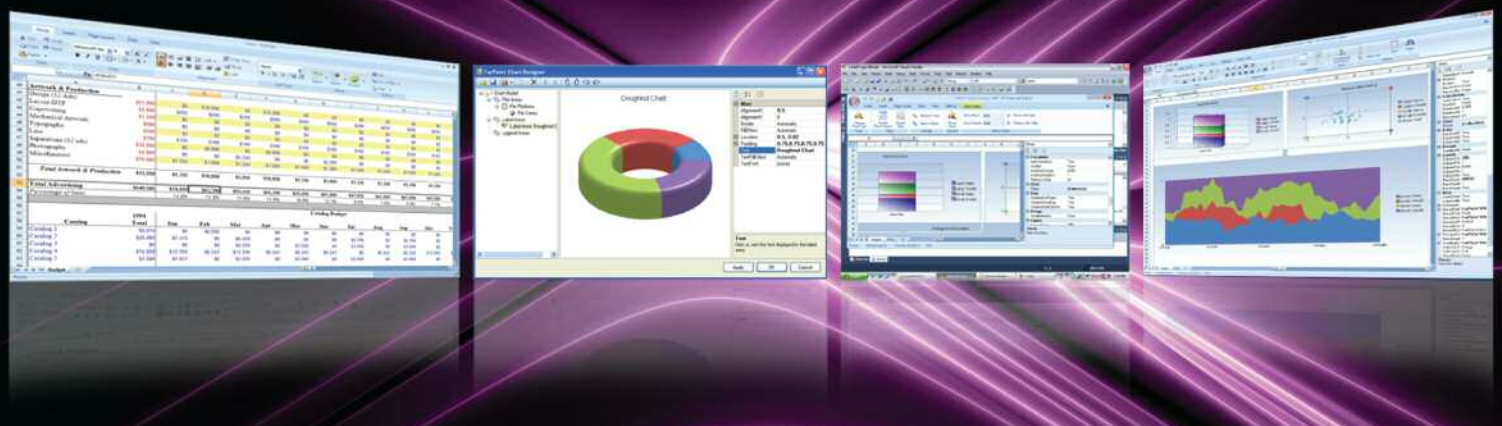

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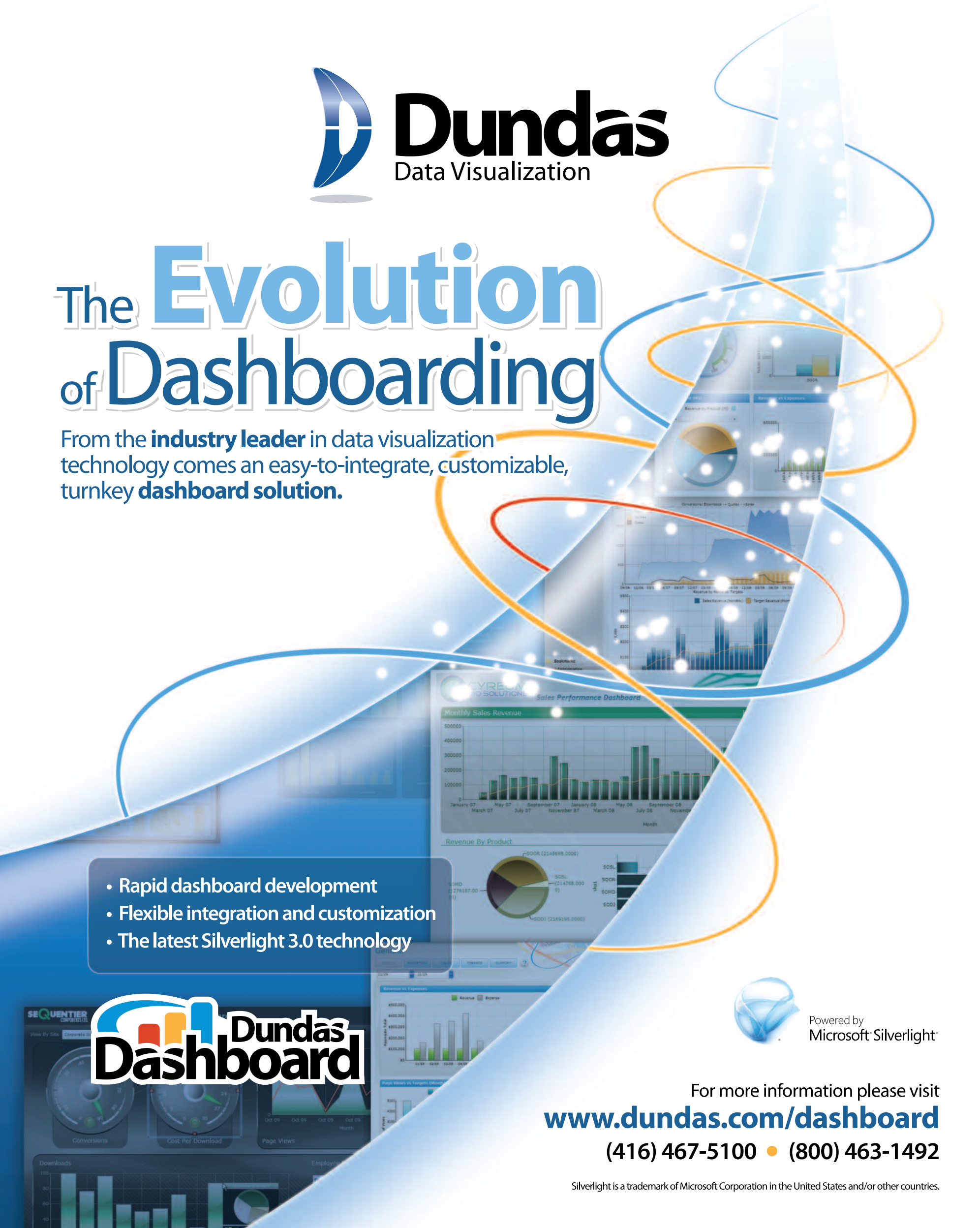

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